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AN INSTANCE OF ALBINISM IN THE WESTERN GOPHER SNAKE.

Cases of complete albinism are fairly common among wild birds and mammals, and a large number of instances have been recorded by various observers, but reports of this condition in reptiles are quite rare; there are but few records from Europe and only a single one from America so far as the writer knows. It becomes of interest therefore to report a case of albinism (complete for one color) occurring in the Western Gopher Snake [*Pituophis catenifer* (Blainville)].

The specimen under discussion was captured in a dormant state at Pescadero, a coastal locality in San Mateo County, California, early in November, 1913, on black adobe soil where gopher snakes were said to be fairly common. The snake was kept alive for more than a year and is now in the reptile collection of the Department of Zoology of the University of California.

The coloration of a typical gopher snake seems to be made up of three distinct materials: a yellow deposit found generally distributed in the scales of the body and forming the ground color, and two darker pigments, a red and a black, occurring locally and forming the contrasted part of the color pattern. The yellow pigment is present in the scales of the albino specimen as is also (in part at least) the red, but the black is entirely lacking. Upon the anterior portion of the body, where ordinarily the black and red together form brown spots only the red is present, and on the tail where a normal specimen is black, only pale bluish or uncolored areas are to be seen. The iris and tongue which are normally dark shared in the loss of color and were of a light pinkish cast. Evidently the factor controlling the formation and deposition of black pigment failed of operation throughout the entire body.

Accompanying this abnormality in coloration there were irregularities in scale pattern, especially on the head, which suggests that whatever cause operated to prevent the formation of black pigment also may have had some effect on scale formation. Several of the head scales are of quite different shape than those found on a normal specimen, and some show suggestions of divisions which were not completed. There are four postoculars, where but three normally occur. The body scales, save for the interpolation of an incomplete gastrotege which extends but half way across the body, are quite typical and numerically are within the limits given by Cope. (The Crocodilians, Lizards and Snakes of North America, Ann. Rept. Smithsonian Inst., for 1898, 1900, pp. 877, 878), viz: Dorsal scale rows, 31 (Cope, 29-33); gastrosteges, $223\frac{1}{2}$ (204-245); urosteges, 64 (56-72).

This snake was kept in captivity for more than a year, confined in a glass terrarium with a screened top. It was provided with water and at intervals small white mice were fed to it; one of these bit the snake on the head and produced a "scalp" wound. One morning after the animal had been in captivity for about four months the skin on the preorbital portion of its head was seen to be free from the scales beneath. Some straw was placed in the terrarium and within a few minutes the snake was working rapidly back and forth through the straw, freeing itself from the old skin. At the place where its body was just being freed from the skin, violent muscular expansions and contractions were being executed. The surface of the snake's body and the outside, originally the inside, of the sluffed skin were noticeably moist as a result of the secretion which had been poured out to assist in moulting. For several weeks previous to moulting the snake had been quite sluggish, remaining coiled in one corner of the terrarium and refusing food. During this time its eye became grad-

ually dulled and the skin was seen to be free from the body in several places. Immediately after the moult the animal became very active.

Several European observers, among them notably Boulenger, Tornier and Werner have reported instances of albinism among snakes, and I have found a number of other European titles on the subject. Opinion, so far as expressed by the latter two workers, seems to be that albinism results from a shortage of yolk in the developing embryo, a supposition which would be in accord with the fact that albino animals are often of smaller size and of a more delicate nature than normal individuals of their species. Perhaps some light could be had on this problem by crossing albino snakes with normally colored individuals of the same species as has been done with trout among fish, and with various species among the higher vertebrates.

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